***IN THE SPECIFICATION:***

Please **amend the paragraph beginning on page 2, line 11,** as follows:

The need to increase the capacity of data communications networks has led to the development of high-speed and high-capacity fiber optic based network systems. One of the major fiber optic network standards that has emerged in recent years is the Synchronous Optical Network or SONET system, and another is the Synchronous Digital Hierarchy (SDH) Standard used in Europe that has many similarities and is generally equivalent to SONET. SONET has developed into a high bit-rate fiber optic based transport system that provides the foundation for linking high-speed network switches and ~~multiplexors~~ multiplexers. It is an intelligent system that provides advanced network management and a standard optical interface.

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Please **amend the paragraph beginning on page 8, line 11,** as follows:

Figure 2 illustrates the logical layout of a SONET network and its relationship to layers in the general Internet Protocol (IP) system. In a wide area network (WAN) or over the Internet, IP traffic typically comprises an upper layer ~~(denoted layer 3)~~ 208 (denoted layer 3) of data. This data is typically managed by

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management layers that utilize various transmission methods, such as Asynchronous Transfer Mode (ATM), Time Division Multiplexing (TDM), Ethernet, or other similar types of transmission methods. These management layers are shown collectively as ~~the~~ a second layer ~~(denoted layer 2)~~ 206 (denoted layer 2) in Figure 2. ~~The~~ A SONET ~~protocol~~ layer 204 (denoted layer 1) is used by the management layer (layer 2) to transmit the data over ~~the~~ a fiber optic medium 202.

Please **amend the paragraph beginning on page ~~8~~ 9, line 20**, and **ending on page ~~9~~ 10, line 9**, as follows:

The SONET protocol 204 itself is divided into layers~~. These layers are the~~: a path layer 216, ~~the~~ a line layer 218, and ~~the~~ a section layer 220. These layers control ~~the~~ photonic ~~(or fiber)~~ layer 202 (or fiber optic medium) that transports the binary digits over the fiber transmission path. The section layer 220 manages the transport of SONET data frames over the physical path using the photonic layer. ~~This~~ The section layer 220 is involved with various tasks, such as section error monitoring, framing, and signal scrambling. The section layer 220 further serves to regenerate the signals at regular intervals over the fiber optic link. The line layer 218 is involved with the maintenance span of the SONET ring, and manages the transport of entire SONET payloads, which are embedded in a sequence of frames, across the fiber optic medium. The line layer is generally responsible for multiplexing the

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different path layers or data signals. The path layer 216 covers the end-to-end transmission over the SONET ring. This layer transports the actual network services between SONET multiplexing equipment.

Please **amend the paragraph beginning on page ~~9~~ 10, line 10,** as follows:

Each ~~SONET layer~~ of the layers 216-220 has a certain number of overhead bytes associated with it. These overhead bytes govern the function of each layer and are logically referred to as the Section Overhead (SOH), Line Overhead (LOH), and Path Overhead (POH) bytes.

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Please **amend the paragraph beginning on page ~~10~~ 11, line 3,** as follows:

Figure 3 illustrates the composition of a SONET ~~frame~~ layer that is used in conjunction with a SONET network that implements embodiments of the present invention. The frame 300 comprises block 302 that represents the section overhead (SOH) bytes, block 304 that represents the line overhead (LOH) bytes, and the payload 306 comprising a series of STS-1 blocks of data. Together the SOH and LOH bytes are referred to as the transfer overhead (TOH) block. The path overhead (POH) is carried in a Synchronous Payload Envelope (SPE) that includes the user data. As illustrated in Figure 3, each STS-1 block represents a

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bandwidth capacity of about 50 Mbps. It should be noted that the STS-1 payload blocks can also represent other types of payload frames, such as STS-3c, STS-9c, and so on, depending upon the optical and electrical levels used in the network system.

Please **amend the paragraph beginning on page ~~10~~ 11, line 13**, as follows:

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As illustrated in Figure 2, the SONET ~~ring~~ layer basically comprises the first layer 204 in a fiber-optic based communication system for data transmission between two or more nodes. On top of the SONET layer resides the second layer 206 management layer that uses the SONET layer to transmit data over a WAN or the Internet. The second layer could be implemented using various different traffic protocols, such as TDM (Time Division Multiplexing), ATM (Asynchronous Transfer Mode), or Ethernet. Present SONET systems typically incorporate certain protection mechanisms to ensure the 20 integrity of data transmissions in the event of a ring failure. The protection mechanisms and redundant fiber optic media are an important feature of SONET based networks.

Please **amend the paragraph beginning on page ~~13~~ 14, line 11**, as follows:

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Figure 4 illustrates the logical partitioning of the STS frames of a SONET ring, according to one embodiment of the present

invention. The SONET ~~frame~~ layer 400 ~~consists of~~ comprises the transport overhead section 402 followed by a number of STS frames. Each STS frame 401 is assumed to be an STS-1 frame for purposes of illustration. However, it should be noted that each frame 401 could represent an STS-3c or other type of STS frame. For the example illustrated in Figure 4, the first three STS-1 frames are grouped together to form a block 404; the next three STS-1 frames are grouped together to form a block 406, and the final three STS-1 frames are grouped together to form a block 408. Each block 404-408 is represented as a logical channel within the entire STS frame bandwidth for the SONET payload. Thus, block 404 is represented as logical channel A 410, block 406 is represented as logical channel B 412, and block 408 is represented as logical channel C 414.

Please **delete page 14 in its entirety** as follows:

~~particular data transmission. This makes it difficult to implement synchronous protocols, such as TDM, where paranteed bandwidth characteristics are important.~~

~~In one embodiment of the present invention a logical ring provisioning feature is implemented to allow the transmission of protected traffic and unprotected traffic over the SONET ring, and thereby allow support for both TDM and data traffic with adequate protection mechanisms in place. In one embodiment, various STS-1 frames are grouped together depending upon the protection or~~

~~bandwidth utilization desired. Using the inventive logical ring provisioning feature, the transmission bandwidth of the SONET ring between every pair of nodes is essentially divided into different bandwidth groups. Each bandwidth group assigned a different level of protection capability.~~

~~Figure 4 illustrates the logical partitioning of the STS frames of a SONET ring, according to one embodiment of the present invention. The SONET frame 400 consists of the transport overhead section 402 followed by a number of STS frames. Each STS frame 401 is assumed to be an STS-1 frame for purposes of illustration. However, it should be noted that each frame 401 could represent an STS-3c or other type of STS frame. For the example illustrated in Figure 4, the first three STS-1 frames are grouped together to form a block 404; the next three STS-1 frames are grouped together to form a block 406, and the final three STS-1 frames are grouped together to form a block 408. Each block 404-408 is represented as a logical channel within the entire STS frame bandwidth for the SONET payload. Thus, block 404 is represented as logical channel A 410, block 406 is represented as logical channel B 412, and block 408 is represented as logical channel C 414.~~

Please **amend the paragraph beginning on page 17, line 15,** and **ending on page 18, line 2,** as follows:

In one embodiment of the present invention, the control card 520 within network element system 500 includes a monitor function 506. Monitor function 506 may be implemented as software processes executed by network element system 500. Alternatively, the functionality provided by monitor function 506 may be programmed into cross-connect circuit 508. For this embodiment, the protection mechanism for each logical channel of STS frames is programmed into the integrated circuit devices that comprise the cross-connect circuit 508. The monitor function ~~508~~ 506 monitors the type of traffic transmitted over the N STS lines from the optical card 502. For example, the traffic could consist of Frame Relay data, or similar types of data typically transmitted over SONET networks. The cross-connect 508 then routes the appropriate traffic to the proper switch.

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Please **amend the paragraph beginning on page 19, line 3,** as follows:

If the bandwidth for a particular logical channel is desired to be shared among the nodes in the SONET network, the layer 1 protection should be disabled. In this case, if there is a failure, the STS frames for the unprotected channels will be dropped by the

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node. In some cases, there may still be some degree of protection available for these frames. For example, if layer 2 protection is available for these channels, such as in the case of ATM or FR traffic, these frames may be re-routed by the switches ~~510-514~~ 508-514, in accordance with layer 2 protection mechanisms.